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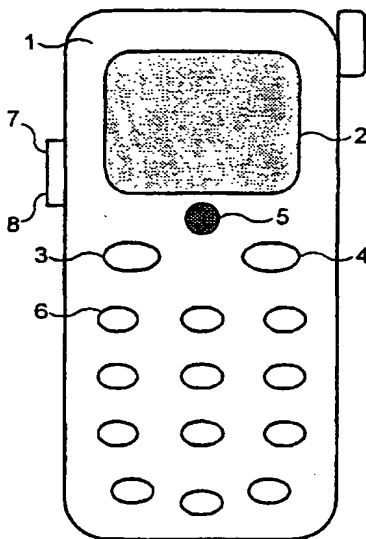
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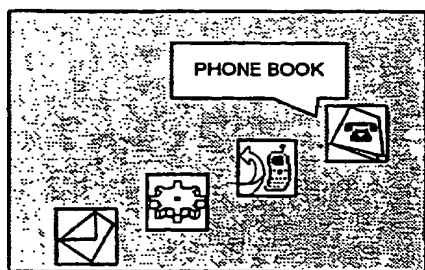
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(54) Title: MOBILE TELEPHONE WITH IMPROVED MAN MACHINE INTERFACE



(57) Abstract: A mobile telephone MMI in which icons are displayed on a display together with text explaining the meaning of a single "active" icon. The "active" icon, representing a function which can actually be selected or initiated, is the only icon with accompanying text. This represents an advance over conventional text based MMIs which many people find difficult to learn, to navigate and are inelegant. Where an icon is displayed together with its associated text, then a user rapidly understands the function to be performed by selecting that icon and also that the status of the computing means (typically a microprocessor) is such that the function can either be performed directly or can be readily navigated to. The text is contained within a cartoon style balloon.



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Mobile Telephone with improved man machine interface**Field of the Invention**

This invention relates to a mobile telephone and in particular to a mobile telephone with an improved man machine interface. The term 'mobile telephone' used in this patent specification should be expansively construed to cover any kind of mobile device with communications capabilities and includes radio telephones, smart phones, communicators, and wireless information devices. It includes devices able to communicate using not only mobile radio such as GSM or UMTS, but also any other kind of wireless communications system, such as Bluetooth.

Description of the Prior Art

One of the problems facing the designers of mobile telephone user interfaces (often called 'man machine interfaces' or 'MMIs') is how to allow the user to comprehend the internal status of the mobile telephone. For example, to select or initiate a function (e.g. to open an address book function, enter a PIN security number or to alter the ring melody) a user has to understand that the status of the telephone is such that the function can be selected or initiated. A closely related problem is how to enable a user to confidently alter the internal status of the phone. This process can be thought of as the problem of how to enable a user to confidently navigate through the feature set of the telephone. Because many quite intricate operations have to be mastered early on for most mobile telephone users (setting security codes,

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altering ring melodies etc.), it is particularly important to facilitate the task of navigating to and activating features in the required way.

5 In addition, mobile telephones offer a very wide (and ever increasing) range of functions. The design of an effective MMI which can be (a) easily navigated by novices yet is (b) flexible enough to enable a large number of functions to be included, is a very challenging task. In fact, it is widely acknowledged
10 that few mobile telephone owners regularly use any but the most basic telephone features because current MMIs are difficult to fully understand. Hence, the technical problem of effectively enabling the user to understand the internal status of the mobile telephone has to date
15 been inadequately addressed.

One of the reasons why many conventional MMIs are inadequate is that mobile telephones are small handheld devices which generally include small display screens. The size of display screens, even for PDA type devices,
20 is far too small to handle a rich and effective MMI, such as the Apple Macintosh Operating System MMI. As a consequence, MMI designers have tended to use text based MMIs, even though the superiority of graphical user interfaces has long been accepted in the desktop
25 computing environment.

Conventionally, the small display size has also meant that several hierarchies of functions have to be offered to a user: the interface can be thought of as having many layers, with the user having to first
30 locate the correct top level function and then, within that function, progressively drill down (sometimes

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through 3 or more layers) to complete the required task. Hence, for example, if a user wishes to enter a new telephone number into an address book stored on the mobile phone, he has to locate a top level function, typically called 'Address Book'. He then selects that function and is presented with a list of second level functions relevant to the 'Address book' top level function. These second level functions typically include options for reading the contents of the Address Book, entering a new number and password protecting access to the address book. Say the user selects the option for entering a new number; he then is presented with a third level screen display asking him to complete various fields with the contact information.

15 With pure text based, multi-level MMIs, it can be very difficult for users to build up an understanding of the structure of the MMI; without understanding, it is very difficult to navigate extensively.

Very recently, some manufacturers have introduced GSM
20 mobile telephones which are beginning to move away from the text only MMI. For example, the Philips Xenium telephone can display several icons on screen; Nokia and Mitsubishi have GSM telephones which can display one icon on a screen at a time. Reference may also be
25 made to some PC operating systems and applications, in which a contextual help system is used: when the user places the mouse arrow over an icon, folder etc. for more than a couple of seconds, a help call-out or balloon appears with an explanation of the function of
30 the icon, folder etc.

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It is particularly important that the physical device(s) used to control navigation are not only easy to operate but also that the way in which they are controlled intuitively matches up with the navigation tasks to be accomplished. Conventionally, these navigation devices are 4 separate buttons (for example, for Up, Down, Accept and Reject). A user has to carefully select the correct button. That generally means that the user has to take his eyes off the screen. In some devices, a single rocker switch will overlie 4 separate buttons. But rocker switches can also require a user to take his eyes off the screen and instead concentrate on selecting and using the navigation button correctly. That in turn makes it far harder, especially for the inexperienced user, to follow and concentrate on the MMI. Where the MMI is difficult to follow anyway (as with text based, multi-level conventional GSM telephones, for example), navigation devices which require a user to take his eyes off the screen can be difficult to use.

Statement of the Invention

In accordance with a first aspect of the present invention, a mobile telephone comprises:

computing means for storing representations of one or more icons and representations of one of more words; and a

display operable to be controlled by the computing means to display the icons and words;

characterised in that the display is operable to display several icons at the same time, together with a word or words explaining the function of a single displayed icon in order to indicate that the status of

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the computing means is such that the function associated with that single icon can be selected or initiated.

Hence, the first aspect of the invention envisages a
5 MMI in which icons are displayed together with text explaining the meaning of a single 'active' icon. The 'active' icon, representing a function which can actually be selected or initiated, is the only icon with accompanying text. This represents an advance
10 over conventional text based MMIs which many people find difficult to learn, to navigate and are inelegant. Where an icon is displayed together with its associated text, then a user rapidly understands the function to be performed by selecting that icon and also that the
15 status of the computing means (typically a micro-processor) is such that the function can either be performed directly or can be readily navigated to. The step of selecting the function will often lead to a related lower level function. Preferably, a word or
20 words can be related to an icon using the visual device of a callout or balloon. This is an effective and familiar metaphor.

The present invention envisages an embodiment in which
25 a top level function, such as the address book function, is represented on the mobile telephone display by an icon of an address book, together with the words 'Address Book' referring to the icon. Preferably, the words 'Address Book' are in a cartoon
30 style balloon. Other top level function icons (without explanatory text) are displayed together with the address book icon. Selecting the address book icon then leads to the display showing several address book

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related second level function icons, such as an icon representative of reading the address book, together with the words 'Consult' or 'Read', as well as further address book related icons without any explanatory words. The second level functions can be navigated through; an icon representing writing a new address book entry can be reached; when reached, the word 'Draft' or 'New Entry' appears by it. Selecting the icon associated with the word 'Draft' or 'New Entry' then results in a display with various contact information fields to be completed by the user.

Preferably, one or more of the following top level functions are associated with icons, with each icon having a related text: phonebook; messages; call register; counters; call diversion; telephone settings; network details; tools; voice mail and IrDA activation. As noted above, the text can be related to the icon using the visual device of a comic style balloon.

Combining an icon with text explaining the function of the icon also enables many icons (typically 4 or 5 on a display of a conventional GSM telephone) to be simultaneously displayed without confusing the user. Preferably, various second level functions, each associated with a single top level function, are also represented by icons. Each will have displayed against them related, explanatory text once the user has navigated to them.

Two or more of the icons may overlap or be shown only in part: this enables more icons to be included on a screen, whilst maintaining legibility; it also generates a 3D effect, which is attractive.

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The user can optionally select that the word or words explaining the function of one or more icons is/are not displayed. This gives an uncluttered look to the display which can be more appealing to a more experienced user. Also, it liberates screen space for bigger icons (or more icons), which again can be appealing to more experienced users.

A zoom (i.e. magnification) function is preferably also provided by which a user can cause the size of the icon and/or the word or words explaining the function of that icon displayed on the display to be altered. The zoom function may be controlled by a volume up and a volume down button; the use of the volume controls to control a zoom function may be useful even where icons are not associated with any kind of explanatory text at all and such an embodiment is within the scope of a further aspect of the invention.

This zoom approach can be more generally applied: in a second aspect, a mobile telephone is with provided a zoom function by which a user can cause the size of an icon and/or text on the display to be altered. The zoom function may alter in dependence on the selected mode or function of the mobile telephone to give one or more zoom settings optimised for the selected mode or function. Hence, this further aspect covers a mobile telephone in which any displayed text (e.g. SMS text) can be zoomed to using the volume keys.

In one embodiment, the data representing an icon is stored in memory; the same data can be used to display the icon at normal size (typically 16x16 pixels) and also at one or more different sizes, such as an

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extended size (64x64). This scalability removes the need to store multiple representations in memory and therefore saves memory; instead a software algorithm alters the displayed size of the icon.

5 In a third aspect, there is provided a mobile telephone in which country codes are stored in a memory and, when a user enters an international dialling prefix, the user is presented with a function which automatically allows the correct country code to be inserted into the
10 number to be dialled. The function typically allows a user to scroll through a list of country names and select the correct country name. City codes and/or other access codes can also be navigated to and selected in the same way. These are very convenient
15 features for users.

In a fourth aspect, there is provided a mobile telephone programmed to allow a list to be edited by a user, in which the list includes an item, accompanied by an icon indicative of writing, in which selection of
20 that icon takes the user to a screen to be completed with details of a new entry for the list.

In a fifth aspect, there is provided a mobile telephone in which an idle screen display can display various icons, in which the position of icons on the idle
25 screen is selected such that icons which never have to appear at the same time are allocated the same position in the idle screen.

Brief Description of the Drawings

The invention will be further described with reference to the accompanying drawings in which:

Figure 1 is a plan view of a mobile telephone in accordance with the present invention;

Figure 2 is a side view of a mobile telephone in accordance with the present invention;

Figure 3 is a plan view of the possible movement which a joystick may make;

Figure 4 is a screen shot showing a top level screen;

Figure 5 is a screen shot showing the top level screen displayed when a user navigates down one step through the top level screen functions shown in figure 4;

Figure 6 is a screen shot showing the second level screen displayed when a user navigates one step deeper into the Phone Book function shown as selected in Figure 1;

Figure 7 is a screen shot showing the second level screen displayed when a user navigates down one step through the second level screen functions shown in Figure 6 (i.e. down through the Phone Book functions);

Figure 8 is a screen shot showing the second level screen displayed when a user navigates down one

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further step through the second level Phone Book functions shown in Figure 7;

5 Figure 9 is a screen shot showing the second level screen displayed when a user navigates up one step through the second level Phone Book functions shown in Figure 8.

Figure 10 is a schematic showing the effect of zooming on icon size;

10 Figure 11 is a schematic showing the effect of zooming on menu text size;

Figure 12 is a schematic showing the effect of zooming on message text size.

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Detailed Description

Referring now to Figure 1, a GSM mobile telephone is shown generally at 1. It includes the conventional features of a display 2, a start call button 4, an end call button 3 and numeric keys indicated generally at 6. Start call button 4 is commonly labelled with a green telephone handset shown off-hook or marked with the word 'SEND'. End call button 3 is commonly labelled with a red telephone handset shown on-hook or marked with the word 'END'. In addition, it also includes a joystick 5, which can be more clearly seen in figure 2 as comprising a short cylindrical member up standing from the front face of the telephone 1. As shown in Figure 3, the joystick can be readily pushed by a user in one of 4 different directions. Joysticks of this kind are available from ITT Canon (ref. TPA 413G).

The MMI allows fast, intuitive navigation to take place. That is best appreciated from Figures 4 to 9. Figure 4 is a screen shot showing a top level screen; the Phone Book icon is readily understood by a user to have been reached since it is (a) at the top of its line, (b) is coupled with the cartoon style call out including the explanatory text 'Phone Book' and (c) no other icons include explanatory text. Hence the user is informed that the internal status of the telephone is such that Phone Book functions can be selected. (From a theoretical perspective, the mobile telephone can be thought of as a state machine; effectively representing the actual state to a user and enabling the user to alter the condition of the state machine is the task of the MMI).

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In figure 4, the next icon down the line is a telephone with an arrow. This represents the 'Diversion' function. To reach the Diversion function, the user nudges the joystick down. Figure 5 shows the result:
5 the Diversion function is shown at the top of the line, accompanied by a call out balloon stating 'Diversion'.

Coupling the downwards nudge of the joystick with moving downwards through a line of icons makes navigation easily understood and readily achieved
10 without any need for the user to take his eyes off the display.

Returning to Figure 1, the Phone Book function can be selected by simply nudging the joystick to the right; this takes the user to the Phone Book related features depicted in Figure 6 - a second level set of
15 functions/features. The user is going deeper into the levels now, so that a nudge to the right is a natural way of expressing this movement. Each of the four top level icons appear to twist around through 180 degrees
20 when the joystick is nudged to the right. Four icons appear to continue twisting around, but these are now icons of the second level functions related to the Phone Book function. These 4 new icons appear to rotate through 180 degrees to yield the Figure 6
25 display.

Figure 6 shows that the 'Consult' feature has been reached since the associated icon plus call out is at the top of the line. The 'Consult' feature can be selected simply by nudging the joystick to the right
30 again. A phone book would then be displayed. If a different Phone Book feature is needed, then the user has to navigate down the list of second level Phone

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Book icons. One nudge down of the joystick takes the user to the display shown in figure 7: the feature 'Draft' has now moved to the top of the line and is accompanied by the call out 'Draft'. This icon, plus the other icons further down, appear to move up the line. The 'Draft' function can be readily selected with a nudge to the right. A further nudge down however takes the user down the line of Phone Book features to yield the Figure 8 display, in which the 'Own number' feature has been reached. Moving up through the second level Phone book features is achieved through nudging the joystick up, as shown in Figure 9. Returning to the top level screen (i.e. as depicted in figure 4) is achieved through nudging the joystick to the left.

Appendix 1 shows a more comprehensive list of the icons and/or words displayed on the display 2 for different levels. It therefore lists the features and functions which can be navigated to and from using the joystick. As explained above, a nudge to the right takes one down into a deeper level of the system (e.g. across a row from top to second level). The higher level icons twist around to reveal the icons of the lower level functions. Nudging left takes one up a level (e.g. across a row from third level to second level). The lower level icons twist around to reveal the icons of the higher level functions. Nudging down takes one down through the items at the same level (down a column) that are associated with the same immediately higher level function. The icons in the line appear to move upwards. Nudging up takes one up through the items at the same level (up a column) that are associated with the same immediately higher level function. The icons in the line appears to move downwards.

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A zoom function is also provided by which a user can cause the size of the icon and/or the word or words explaining the function of that icon displayed on the display to be altered. The zoom function is controlled
5 by a volume up (Figure 1, at 7) and a volume down button (Figure 1, at 8). The user can zoom in and out as shown in Figure 10; in addition the user can select that the word or words explaining the function of one or more icons is/are not displayed (Figure 10, bottom
10 right). This gives an uncluttered look to the display which can be more appealing to a more experienced user. Also, it liberates screen space for more icons, which again can be appealing to more experienced users. Another earlier use of the volume controls to control
15 a zoom function may be useful even where icons are not associated with any kind of explanatory text at all and such an embodiment is within the scope of a further aspect of the invention.

Figure 10 also shows how icons can be made to overlap,
20 thereby allowing more icons to fit onto a display without destroying legibility. This purely text based implementation is illustrated at Figure 11 for menu navigation. Zooming is also very useful when reading text, such as in a SMS message. This is shown in
25 Figure 12.

Again, the use of the volume controls for zooming is intuitive, removes the need for additional zoom-specific keys and therefore saves cost and reduces the apparent complexity of the telephone. Arranging for the
30 zoom In and zoom Out functions to be controlled by the volume keys is also attractive since it enables a user

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to perform a zoom at any stage in the navigation process (except during a call or in idle, where speaker and ringer are respectively managed by these keys). This is particularly helpful in enabling an inexperienced user to experiment with and therefore learn the structure of the navigation system.

The zoom function may alter in dependence on the selected mode or function of the mobile telephone to give one or more zoom settings optimised for the selected mode or function. For example, when editing text, the zoom can magnify an amount that is most relevant to seeing text clearly (and multiple zoom settings can be provided and accessed through multiple nudges of the zoom button). A different zoom amount may be appropriate for zooming into the normal icon based menus, and another for zooming into text only menus. The zoom function works particularly well with the mobile telephone of the first aspect of the present invention.

The data representing an icon is stored in memory; the same data can be used to display the icon at normal size (typically 16x16 pixels) and also at one or more different sizes, such as an extended size (64x64) using a software algorithm. This scalability removes the need to store multiple representations in memory, which is a valuable resource.

Another particularly useful feature arises when a user wishes to dial an overseas number; the user will initially press the '00' or '+' international dialling prefix keys. When that happens, the display shows a list of countries which the user can scroll down by

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nudging the joystick down and scroll up by nudging the joystick up. A selectable country is highlighted in the list and appears at the top of the list; it can be selected by nudging the joystick to the right. Once
5 selected, the country code is automatically included into the number to be dialled. This approach can be extended to cities and other country specific codes as well, which can be navigated to by selecting first the country; that results in the display showing '00' and
10 the correct country code. Then, the user can either enter the full number, or if he is unsure of the city code or other code, he can nudge the joystick once to the right to bring up a list of cities in the selected country and other code types. As before, he can scroll
15 through the cities and code types until he reaches the correct city, which can then be selected by nudging the joystick to the right. This results in the correct city code appearing in the display.

A further useful feature is that where any list can be
20 edited by a user, then that list includes an 'Add Entry' item, accompanied by a pen icon. Selecting the 'Add Entry' item takes the user to a screen to be completed with the new entry details.

Another feature is that the top of the idle screen
25 (i.e. the screen displayed when the telephone is on but not in use) can display a number of different icons, such as the battery level indicator, signal strength indicator, time and date etc. Certain functions can be selected, such as 'ringer off': this
30 is represented by a small icon of a bell with a line through it on the idle screen. However, icons for certain functions do not have to be displayed when

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certain other icons are displayed; for example they may represent a function which is not as important as the function with a displayed icon. A specific example would be that if 'no ringer' was selected' as well as 'unconditional call forwarding', then the icon only for 'unconditional call forwarding' would be displayed. That is because it takes precedence. As a consequence, the position in the idle screen for 'no ringer' icon as well as the 'unconditional call forwarding' icon can be the same. The Home Zone and the Roaming icons can also share the same position on the idle screen, since these icons can never be simultaneously displayed. Where screen size is at a premium, as with GSM mobile telephones, for example, the rational and effective allocation of how to use the idle screen is very important.

Appendix 1

Top level functions	Second level functions (all icons are task specific)	Third level functions (Words only, unless otherwise stated)	Fourth level functions (Words only, unless otherwise stated)
Phone Book Icon + words 'Phone book'	Icon + word 'Consult'	Open up address book	
	Icon + word 'Draft'	Enter Name	
	Icon + words 'Own Number'	Display Own number	
	Icon + word 'Capacity'	Displays storage info	
	Icon + word 'Restrict'	Enter restrictions PIN	
	Icon + word 'Business Card'	Enter your business card details	
Message Icon + word 'Messages'	Icon + words 'Write Message'	Create New	Write Message
		Use pre-defined	Select a pre-define message
	Icon + words 'In Box'	List in-coming messages	
	Icon + words 'Out-Box'	List outgoing messages	
	Icon + words 'Capacity'	Displays storage info	

5

10

	Icon + word 'Settings'	Service Center	Message Center Number
		Validity Period	Select validity period option
		Message type	Select message type (e.g. fax, e-mail, *400, standard text, telex
		Delivery Report	Select 'on' or 'off' options
		Reply via same	Select 'on' or 'off' options
		Melody	Select Melody option
	Icon + words 'Cell Broadcast'	Receive CB	Select cell broadcast 'on' or 'off'
Call Register Icon + words 'Call Register'	Icon + words 'Missed Calls'	Lists missed calls	
	Icon + words 'Received calls'	Lists received calls	
	Icon + words 'Dialled calls'	Lists dialled calls	Send message to; Call number; Forward calls to; Save number; Options to select; then takes you to appropriate screen

5

10

	Icon + words 'Delete'	Lists Missed calls, Received calls, Dialed Calls, All Calls	
Counters Icon + word 'Counters'	Icon + word 'Time'	Last call; all calls out; all calls in; Clear timers	Displays time count data
Divert Icon + word 'Divert'	Unconditional ; all unanswered; if busy, if no reply; if not reachable	Activate; deactivate and status check	Voice, fax, data all options to select, then takes you to phone book to select number to receive diversions
Settings Icon + word 'Settings'	Icon + word 'Language'	List of various language options to select	
	Icon + words 'Alert tones'	Icon + words 'Melodies'	All cases; number stored; Number not stored; messages; Alarm to be selected; then gives list of melodies to select
		Icon + words 'Key Tones'	On, Off and DTMF tones to be selected

		Icon + words 'Deep Silent'	On or off to be selected
		Icon + words 'Ringer Volume'	3 ranges to be selected
	Icon + words 'Auto key lock'	On or off to be selected	
	Icon + word 'Security'	Change PIN and Disable PIN options	Enter PIN required
	Icon + word 'Time & Date'	Displays time and Date	Alter time and date
	Icon + word 'Auto -answer'	On or off to be selected	
	Icon + word 'Hot keys'	Lists hot keys	
	Icon + word 'Contrast'	Select 1 - 3 contrast scale	
Network: Icon + word 'Network:'	Icon + word 'Services'	Barring	Select outgoing, incoming, barring password
		Call waiting	Activate, de- activate, status check
		Identification	See caller ID; call incognito; see connected ID; connect incognito; status check
	Auto-redial	On or off to be selected	
	Change network		

	Preferred networks	Lists preferred networks	
	Registration mode	Lists automatic, manual, force network	
5	Demonstration Icon + word 'Demonstration'	Give a demo of the phone	
	Tools Icon + word 'Tools'	Calculator; calendar, games	
10	IrDA Icon + words 'IrDA Activation'	Activation option	

Claims

1. A mobile telephone comprising:
computing means for storing representations of one
or more icons and representations of one of more words;
5 and a

display operable to be controlled by the computing
means to display the icons and words;

characterised in that the display is operable to
display several icons at the same time, together with
10 a word or words explaining the function of a single
displayed icon in order to indicate that the status of
the computing means is such that the function
associated with that single icon can be selected or
initiated.

15 2. The mobile telephone of claim 1 in which selection
of an icon associated with a first function results in
the computing means causing the display to show a
further icon, together with a word explaining the
function of that further icon, being a second function
20 which is related but at a lower level than the first
function, to indicate the status of the computing means
as being in a state in which it is operable to select
or initiate the second function.

25 3. The mobile telephone of claim 2 in which one or
more of the following functions are first functions:
phonebook; messages; call register; counters; call
diversion; telephone settings; network details; tools;
voice mail and IrDA activation.

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4. The mobile telephone of any preceding Claim in which a word or words can be related to an icon using the visual device of a callout or balloon.
- 5 5. The mobile telephone of Claim 1 in which there is provided a zoom function by which a user can cause the size of the icon and/or the word or words explaining the function of that icon displayed on the display to be altered.
- 10 6. The mobile telephone of Claim 5 in which the zoom function is controlled by a volume up and a volume down button.
7. The mobile telephone of Claim 6 where the user can zoom in and out at anytime, except during a call.
- 15 8. The mobile telephone of Claims 5 - 7 in which a single representation of an icon is stored in memory and a software algorithm is used to generate altered icon sizes on the display.
- 20 9. The mobile telephone of any preceding Claim in which two or more of the icons overlap.
10. The mobile telephone of any preceding Claim in which the user can select that the word or words explaining the function of one or more icons is/are not displayed.
- 25 11. The mobile telephone of Claim 5 and any claim dependent on Claim 5 in which data representing an icon is stored in a memory and the same data can be used to display the icon at two or more different sizes.

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12. A mobile telephone in which there is provided a zoom function by which a user can cause the size of an icon and/or text on the display to be altered.

13. The mobile telephone of Claim 12 in which the zoom function alters in dependence on the selected mode or function of the mobile telephone to give one or more zoom settings optimised for the selected mode or function.

14. The mobile telephone of Claim 12 or 13 in which the zoom function is controlled by a volume up and a volume down button.

15. The mobile telephone of Claim 14 where the user can zoom in and out at anytime, except during a call.

16. A mobile telephone in which country codes are stored in a memory and, when a user enters an international dialling prefix, the user is presented with a function which automatically allows the correct country code to be inserted into the number to be dialled.

17. The mobile telephone of Claim 16 in which the function allows a user to scroll through a list of country names and select the correct country name.

18. The mobile telephone of Claim 16 or 17 in which city codes and/or other access codes are stored in the memory and can be navigated to and selected.

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19. A mobile telephone programmed to allow a list to be edited by a user, in which the list includes an item, accompanied by an icon indicative of writing, in which selection of that icon takes the user to a screen to be completed with details of a new entry for the list.

20. A mobile telephone in which an idle screen display can display various icons, in which the position of icons is selected such that icons which never have to appear at the same time are allocated the same location in the idle screen.

21. A mobile telephone as claimed in Claim 20 in which the roaming icon and the home zone icon are displayable in the same location.

22. A mobile telephone as claimed in Claim 20 in which the call forward unconditional icon and the silent ring icon are displayable in the same location.

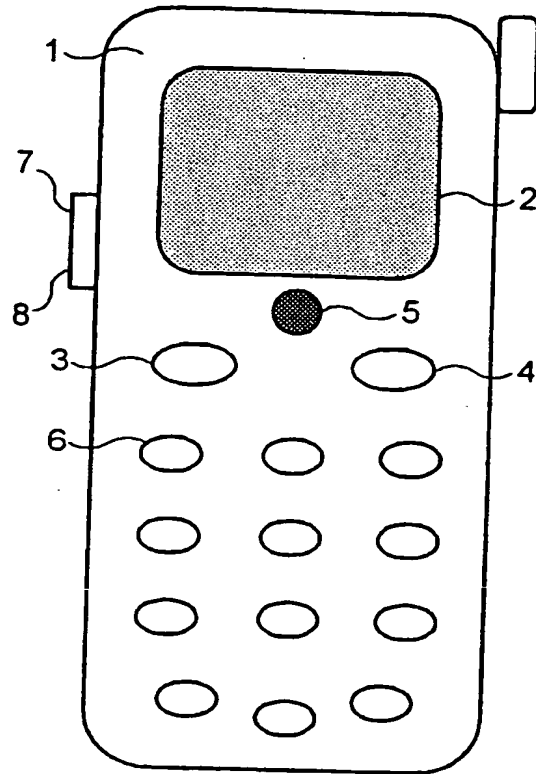


FIG. 1

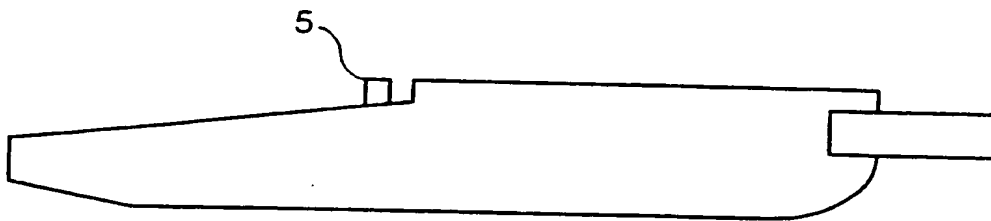


FIG. 2

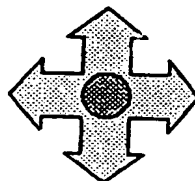


FIG. 3

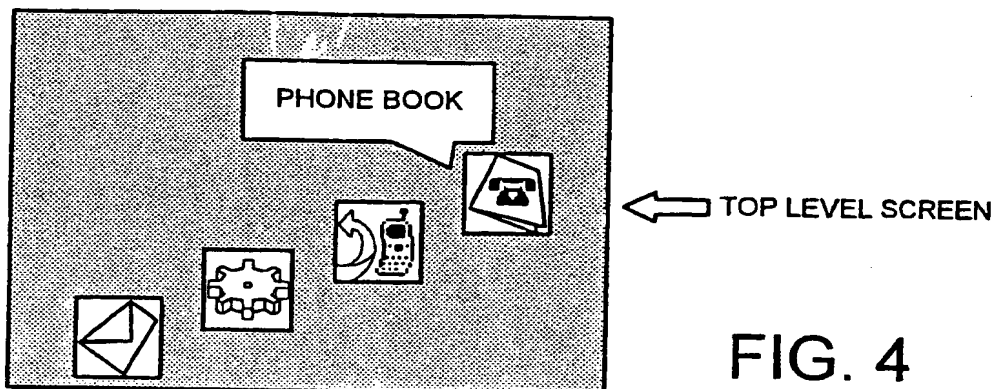


FIG. 4

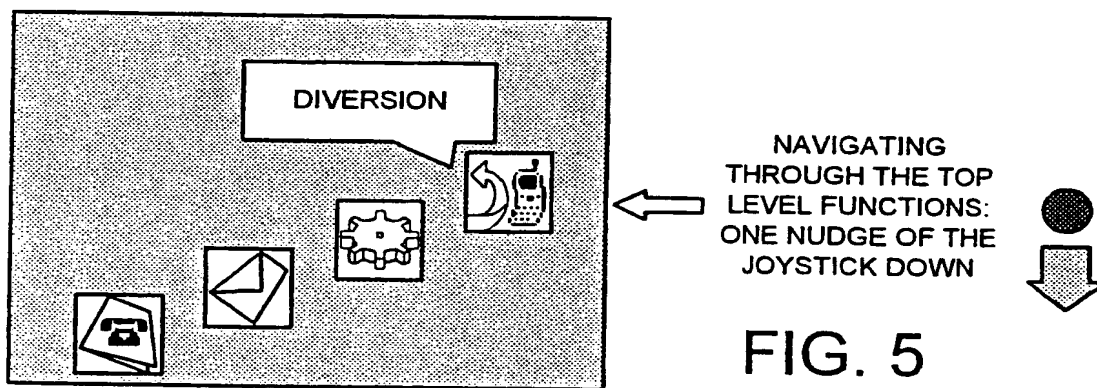


FIG. 5

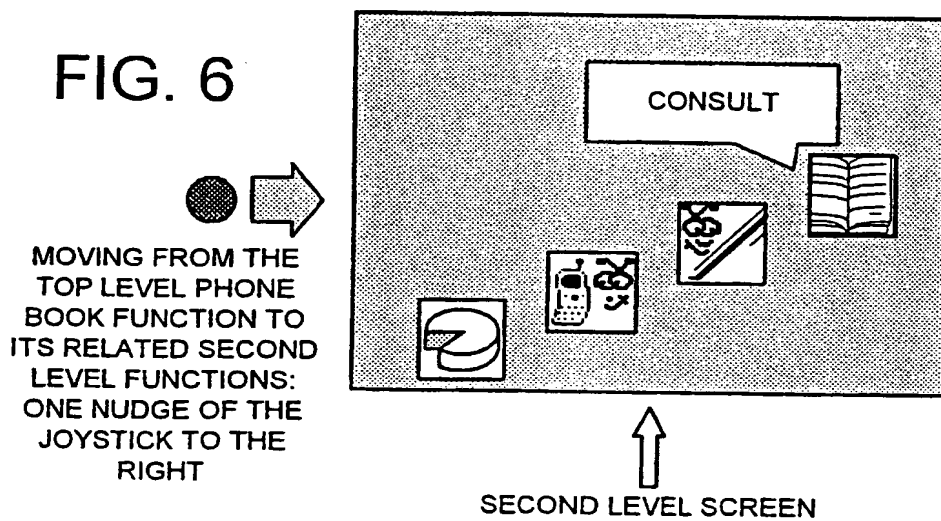
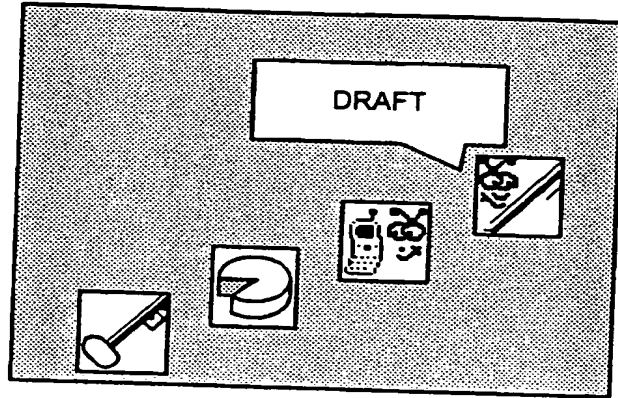


FIG. 6

NAVIGATING THROUGH THE SECOND LEVEL SCREEN: ONE NUJGE OF THE JOYSTICK DOWN



FIG. 7



NAVIGATING FURTHER THROUGH THE SECOND LEVEL SCREEN: ONE MORE NUJGE OF THE JOYSTICK DOWN



FIG. 8

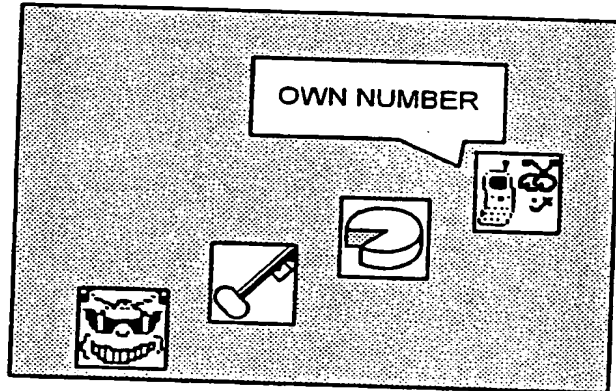
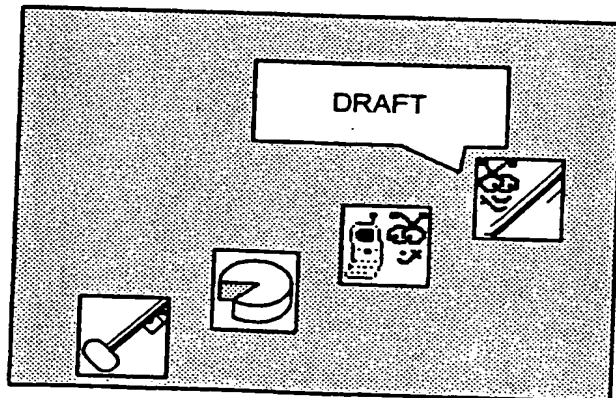


FIG. 9



NAVIGATING THROUGH THE SECOND LEVEL SCREEN: ONE NUJGE OF THE JOYSTICK BACK UP AGAIN



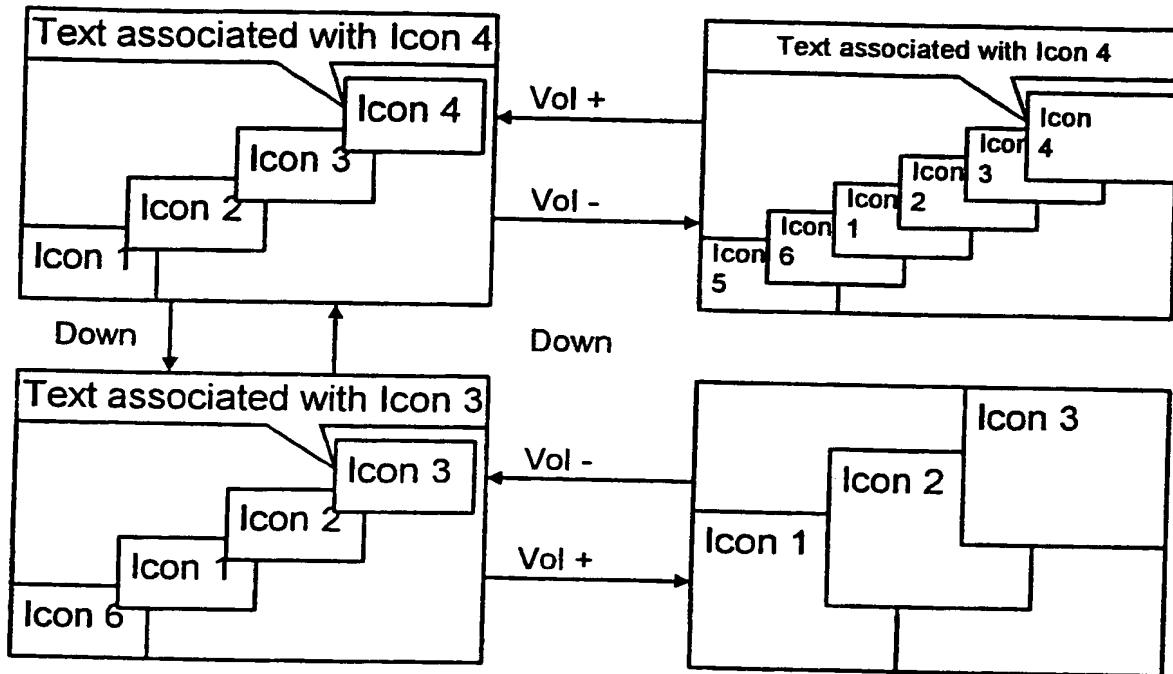


FIG. 10

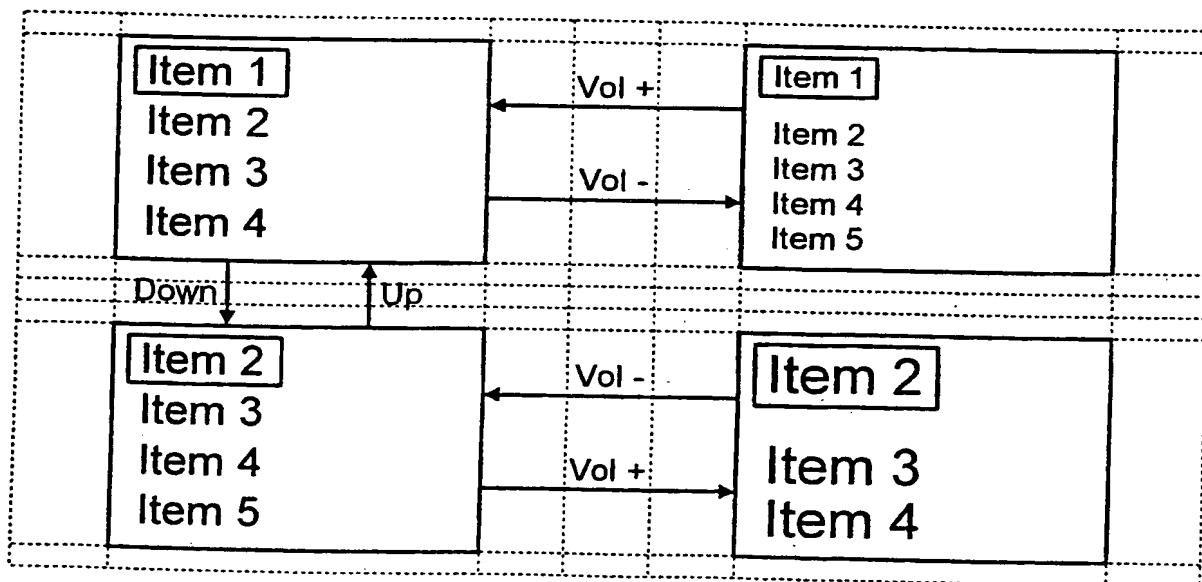


FIG. 11

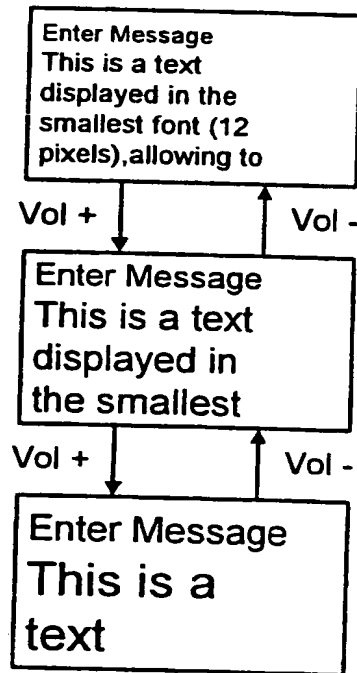


FIG. 12

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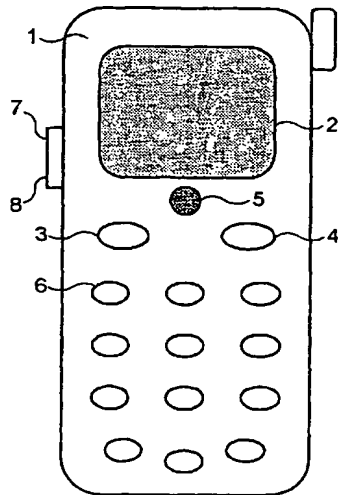
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WO 01/061444 A3

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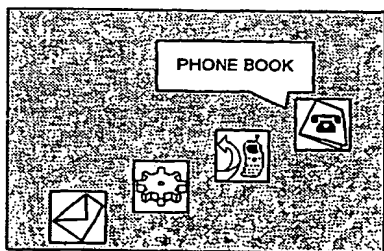
- (51) International Patent Classification⁷: **H04M 1/247, 1/2745**
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **ANDRÉ, Jean-Marie** [FR/GB]; 37 Risborough Road, Stoke Mandeville, Aylesbury, Buckinghamshire HP22 5UP (GB).
- (21) International Application Number: **PCT/GB01/00669**
- (74) Agent: **LLOYD, Patrick, Alexander, Desmond**; Reddie & Grose, 16 Theobalds Road, London WC1X 8PL (GB).
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- (26) Publication Language: **English**
- (30) Priority Data:
0003941.2 **18 February 2000 (18.02.2000)** **GB**
- (71) Applicant (for all designated States except US): **VTECH MOBILE LIMITED** [GB/GB]; The Friary, Rickfords Hill, Aylesbury, Buckinghamshire HP20 2RT (GB).
- (84) Designated States (regional): **ARIPO** patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European

[Continued on next page]

(54) Title: **MOBILE TELEPHONE WITH IMPROVED MAN MACHINE INTERFACE**



(57) Abstract: A mobile telephone MMI in which icons are displayed on a display together with text explaining the meaning of a single "active" icon. The "active" icon, representing a function which can actually be selected or initiated, is the only icon with accompanying text. This represents an advance over conventional text based MMIs which many people find difficult to learn, to navigate and are inelegant. Where an icon is displayed together with its associated text, then a user rapidly understands the function to be performed by selecting that icon and also that the status of the computing means (typically a microprocessor) is such that the function can either be performed directly or can be readily navigated to. The text is contained within a cartoon style balloon.



← TOP LEVEL SCREEN

WO 01/061444 A3



patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
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INTERNATIONAL SEARCH REPORT

Inventor: Application No
PCT/GB 01/00669

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/247 H04M1/2745

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M G06F G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 30004 A (ERICSSON GE MOBILE INC) 9 July 1998 (1998-07-09) abstract page 2, line 31 -page 3, line 15 page 4, line 3-22 page 6, line 21 -page 8, line 14 figures 1-5	1, 3, 4, 10
Y	---	2, 5-9, 11
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Date of the actual completion of the international search

15 January 2003

Date of mailing of the international search report

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Inter: al Application No

PCT/GB 01/00669

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

international application No.
PCT/GB 01/00669

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-11

A mobile telephone capable of displaying several icons at the same time, together with a word or words explaining the function of a single display icon in order to indicate that the status of the computing means is such that a the function associated with that single icon can be selected or initiated.

2. Claims: 12-15

A mobile telephone provided with a zoom function by which the user can cause the size of an icon and/or text on the display to be altered.

3. Claims: 16-18

A mobile telephone in which the country codes are stored in a memory and, when the user enters an international dialling prefix, the user is presented with a function which automatically allows the correct country code to be inserted into the number to be dialled.

4. Claim : 19

A mobile telephone displaying a list comprising items accompanied by an icon indicative of writing. The selection of the icon takes the user to a screen to be completed with details of a new entry for the list.

5. Claims: 20-22

A mobile telephone in which an idle screen displays several icons, in which the position of icons is selected such that icons which never have to appear at the same time are allocated the same location in the idle screen.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 01/00669

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Intern: Application No

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